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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/073,415      | 02/13/2002  | Tsutomu Shinagawa    | 0171-0819P          | 3976             |

2292 7590 08/25/2003

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EXAMINER

ROSASCO, STEPHEN D

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1756

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/073,415

Applicant(s)

SHINAGAWA ET AL.

Examiner

Stephen Rosasco

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### Detailed Action

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Mitusi (6,037,083).

The claimed invention is directed to a photomask blank comprising a light-shielding film and an antireflective film on a transparent substrate, the light-shielding film and the antireflective film are formed of a chromium base material containing oxygen, nitrogen and carbon such that the content of carbon decreases stepwise or continuously from a surface side toward the substrate. The photomask blank can be etched at a controlled rate to produce perpendicular walls. A photomask is manufactured by lithographically patterning the photomask blank. The photomask blank and photomask have uniform film properties and contribute to the microfabrication of semiconductor ICs of greater density and finer feature size.

Mitsui teaches a halftone phase shift mask blank formed by sputtering and comprising: a transparent substrate; a halftone material film laminated on said transparent substrate; and a metal film laminated on said halftone material film; wherein: said halftone material film consists of material containing a metal and silicon;

said metal film consists of material the main component of which is chromium;

a component containing nitrogen is contained in region closer to the transparent substrate side of said metal film; and

a component containing carbon is contained in region closer to the surface side of said metal film.

And wherein said metal film has either a region wherein nitrogen content continuously increases, or a region wherein carbon content continually decreases, as said transparent substrate side is approached from said surface side of said metal film, or a region wherein nitrogen content continuously increases while carbon content continuously decreases as said transparent substrate side is approached from said surface side of said metal film.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Alpay et al. (5,415,953).

Alpay et al. teach a phase shifting blank wherein the layers are formed by sputtering and the presence of a depthwise compositional profile in the deposited film is shown in FIG. 1. In this compositional profile, one can see the optimized depthwise structure of this EPS-PMB, with increased oxygen content at the surface, increased Cr-level and nitrogen content towards the film-substrate interface and an increase in the carbon content from the surface to the film substrate interface.

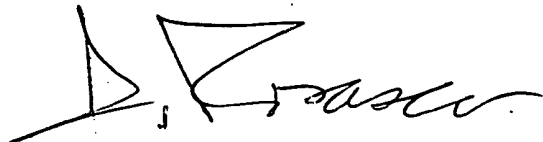
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Rosasco whose telephone number is (703) 308-4402.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661. Fax (703) 872-9310 Before Finals; 872-9311 After Finals.

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized, angular initial 'S'.

S. Rosasco  
Primary Examiner  
Art Unit 1756

S. Rosasco  
8/21/03